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Western White Pine

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WESTERN WHITE PINE

(*Pinus monticola*)

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Western white pine is an important timber tree growing in the northwestern part of the United States. The heaviest stands are found in northern Idaho, and a large part of the lumber produced comes from the State. Western white pine is long-lived, attaining an age of from 200 to 500 years, and occasionally reaching a height of 175 feet and diameter of 5 feet.

The wood closely resembles that of eastern white pine and has many of the same uses. A considerable proportion of the high-grade lumber is shipped to factories in the Eastern States for manufacture into doors, frames, sash, and interior trim. Western white pine supplies large quantities of match blocks which are also shipped to the East for manufacture into matches. Boards with sound, tight knots are coming into considerable use for knotty-pine paneling. Much of the lower grade material is used for structural building purposes and boxes near the regions where the timber grows.

Western white pine, like the other white pines, is subject to serious attack by the white-pine blister rust. This disease cannot spread directly from an infected to a healthy tree, but must have an intermediate host of currant or gooseberry bushes (genus *ribes*). The spores from infected trees are released in the spring, and those that alight on the leaves of the currant or gooseberry bushes rapidly infect them and form other spores; when liberated in the fall, they are carried by the wind to healthy trees, thus starting the cycle again.

The future of western white pine and the other white pines, depends in large measure on control of the disease. Vigorous steps have been taken in several regions to bring about this control by destroying all currant and gooseberry bushes in and near forests in which white pine grows. Progress has been made, but lasting success is, of course, dependent on the funds and manpower available for eradication work, and on maintenance of conditions that will keep infection at a minimum.

Nomenclature.—Western white pine is frequently known as Idaho white pine or simply white pine.

Distribution and growth.—The range of western white pine extends from the lower part of British Columbia southward into western Montana and northern Idaho, and along the Cascade Mountains and the Sierra Nevadas through Washington and Oregon to central California (fig. 1). The heaviest stands occur in northern Idaho and in adjacent parts of Montana and Washington. Western white pine generally grows in mixture with western hemlock, western redcedar, western larch, grand fir, and Douglas-fir but occasionally occurs in pure stands on limited areas. Under the best conditions it reaches a diameter of 4.5 inches and height of 53 feet in 40 years, and a diameter

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of 10.4 inches and height of 115 feet in 80 years. Mature trees are generally 100 to 150 feet high and 2 to 3 feet in diameter.

Western white pine usually produces a good crop of seeds about every third or fourth year. If the seeds fall in moist duff, they retain their vitality for as long as two years. This so-called stored seed produces a considerable number of seedlings, but cannot be depended on

FIGURE 1.—Range of western white pine (*Pinus monticola*).

to provide enough trees to restock adequately areas that have been logged. To insure a full crop of western white pine on cut-over lands, it is necessary to have seed trees or some other additional source of seed. On favorable sites that are moist, western white pine establishes itself satisfactorily in full sunlight, and once established holds its own against most competitors. On drier, hotter sites, such as flats and southerly slopes, reproduction is aided by partial shade.

Supply.—An estimate made in 1933[1] gave the stand of western white pine in the United States as 19,508,000,000 board feet, of which

[1] UNITED STATES FOREST SERVICE. A NATIONAL PLAN FOR AMERICAN FORESTRY. 73d Cong., 1st sess., Senate Doc. 12, 2 v. 1933.

approximately 80 percent was in Idaho and Montana. A later estimate (1938), based on forest surveys conducted in Washington, Oregon, Idaho, and Montana, as part of a Forest Survey of the United States, showed a total stand of 17,774,000,000 board feet (lumber tally) distributed as follows: [2]

Region:	*Stand (board feet)*
Idaho	[1] 12, 155, 000, 000
Montana	[2] 1, 049, 000, 000
Washington, western part	[3] 1, 617, 000, 000
Washington, eastern part	[4] 1, 140, 000, 000
Oregon, western part	[2] 1, 417, 000, 000
Oregon, eastern part	[5] 396, 000, 000
Total stand in the United States	17, 774, 000, 000

[1] U. S. Forest Service, Northern Rocky Mountain Forest and Range Experiment Station. Forest statistics for northern Idaho. Forest Survey Statis. Serv. 10, illus. 1941. [Processed.]

[2] U. S. Forest Service, Northern Rocky Mountain Forest and Range Experiment. Station. Highlights of the forest situation in western Montana. Forest Survey Statis. Serv. 14, illus. 1943. [Processed.]

[3] H. J. Andews and R. W. Cowlin. Forest resources of the Douglas-fir region U. S. Dept. Agr. Misc. Pub. 389, 169 pp., illus. 1940.

[4] R. W. Cowlin, P. A. Briegleb, and F. W. Moravets. Forest resources of the ponderosa pine region. U. S. Dept. Agr. Misc. Pub. 490, 99 pp., illus. 1942.

See also U. S. Forest Service, Northern Rocky Mountain Forest and Range Experiment Station:

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Forest statistics, Spokane County, Washington. Forest Survey Release 4, 24 pp., illus. 1937. [Processed.]

Forest statistics, Stevens County, Washington. Forest Survey Release 5, 24 pp., illus. 1937. [Processed.] (These reports cover three northeastern counties in Washington not included in Misc. Pub. 490.)

[5] See Misc. Pub. 490 cited in footnote 4.

Heavy cutting of western white pine [3] in excess of growth, has taken place since the forest surveys were made, especially in Idaho. It is highly probable that the 1943 stand of this species in the United States did not exceed 17 billion board feet.

Production.—The recorded production of western white pine lumber in 1869 [4] amounted to about 1,000,000 board feet (fig. 2). During the next 35 years it rose gradually to several times that amount. After 1904, production mounted rapidly and in 1930 reached 545,000,000 board feet. In 1932 it dropped to 235,000,000 board feet, but by 1937 had recovered to 563,000,000 board feet [5]—the maximum production in any one year. In 1943 production was 350,510,000 board feet. The average annual cut of western white pine lumber during the 10-year period 1934–43 was approximately 463 million board feet. During this period, about 78 percent of the lumber produced came from Idaho and 17 percent from Washington. Montana and Oregon also furnished small amounts. Idaho has always been the leading State in the production of western white pine, with Washington second.

Properties.—Heartwood of western white pine is cream colored to light reddish brown, darkening on exposure. The sapwood is yellow-

[2] The stand of western white pine in California is negligible, although the species is scattered through the mountains in the northern part of the State.

[3] Brought about principally by war demands.

[4] The earliest year in which the cut of western white pine can be separated from the other pines. The cut of eastern white pine in 1869 was over 5,770,000,000 board feet.

[5] The cut of eastern white pine during the same year, including small amounts of red pine and jack pine, was 499 million board feet.

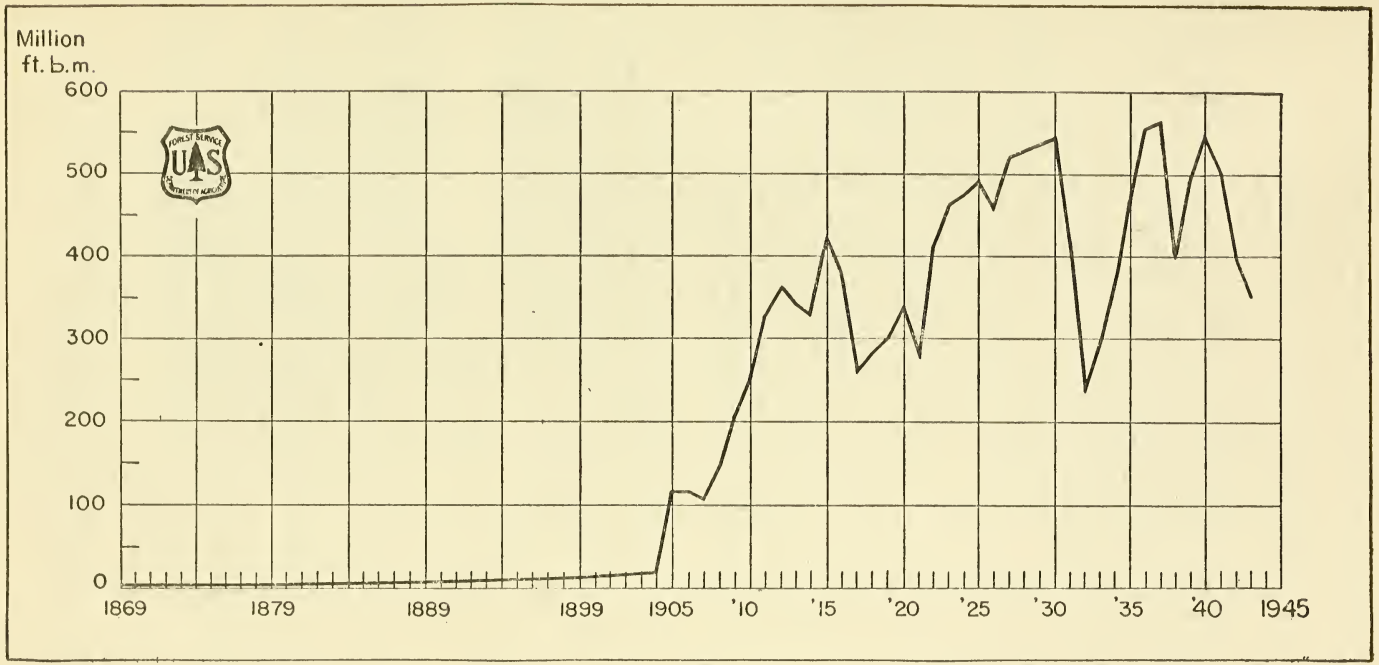

FIGURE 2.—Lumber production of western white pine (*Pinus monticola*), 1869–1943.

ish white and generally from 1 to 3 inches wide in trees of saw-timber size. Growth rings are made up of a band of comparatively wide springwood which merges gradually into a darker, narrower band of summerwood. Both offer about the same resistance to cutting tools.

Western white pine is straight grained, easy to work, easily kiln-dried, and stays in place well after seasoning. The wood is moderately light in weight,[6] weak, moderately stiff, moderately soft, moderately low in ability to resist shock, and has a moderately large shrinkage. It is slightly heavier than eastern white pine, shrinks more in drying, and is slightly above it in strength properties.[7] Western white pine ranks high in ability to hold paint and can be glued readily. It does not split easily in nailing and occupies an intermediate position in nail-holding ability. In decay resistance it is also rated as intermediate.

Principal uses.—Practically all of the western white pine taken from the forest is sawed into lumber used principally for building construction, match planks, boxes, and millwork products such as sash, frames, doors, and blinds. Western white pine lumber that goes into building construction [8] is made up of boards of the lower grades, used without further manufacture, for sheathing, subflooring, and roof strips and high-grade material made into siding of various kinds, exterior and interior trim, partitions, casings, bases, paneling, etc. Western white pine like eastern white pine, can be satisfactorily used for nearly every part of a house because of the ease with which it can be cut and shaped with tools, its ability to stay in place, take and hold paint and enamel, and its nailing properties.

Approximately half of the western white pine used in the manufacture of wooden products in recent years has gone into matches. For this use, western white pine has displaced eastern white pine. Western white pine matches are made from blocks cut from match plank. The planks are 2 to 2½ inches thick, and contain knots and defects, but they must be of a grade that will yield at least 60 percent of their volume in clear, straight-grained blocks of match length with the proper color and texture. Smaller yields are not profitable, and high-grade lumber capable of high yields of match blocks brings better prices when sold for other purposes.

As a box wood western white pine, like eastern white pine, is highly satisfactory because of its light weight, light color, nailing properties, freedom from odor, and ease of working. Lower grades of western white pine are generally employed in box construction. For doors, window frames, and sash, where ability to stay in place, ease of working, uniform texture, and ability to hold paint are required, higher grades have proved entirely suitable. Among the less important uses of the wood, from the standpoint of quantity, are car construction and repair, patterns, fixtures, and caskets.

Table 1 shows the amounts of western white pine used in the manufacture of wooden products in 1912, 1928, 1933, and 1940. The material was largely in the form of lumber, with much smaller amounts of veneer, and logs and bolts.

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[6] The average weight of western white pine in an air-dry condition (12 percent moisture) is 27 pounds per cubic foot.

[7] These two white pines are about equal in hardness.

[8] Probably about 75 percent of western white pine is used for this purpose.

TABLE 1.—*Western white pine used in the manufacture of wooden products*

[Thousands of board feet]

Product	1912	1928	1933	1940
Airplanes		8		22
Agricultural implements		318	8	55
Boot and shoe findings				604
Boxes, baskets and crating	10,980	51,129	[1] 27,954	[1] 30,275
Boxes, cigar and tobacco			495	130
Car construction and repair	94	5,895	1,852	28
Caskets and burial boxes	202	5,076	689	212
Dairy, poultry, and apiary supplies	100	502	390	21
Electrical equipment		13		10
Fixtures	229	1,960	873	1,156
Flooring	[2]	[2]		2,027
Furniture	35	1,068	419	1,254
Handles		32		
Instruments, musical		382	13	48
Instruments, professional and scientific	175	8	25	7
Laundry appliances			2	220
Machinery		1		41
Matches	250	103,838	70,613	73,978
Patterns and flasks	109	1,165	1,832	6,239
Playground equipment	5			7
Radio and phonograph cabinets			7	21
Refrigerators			141	371
Rollers, shade and map			30	
Sash, doors, general millwork	[3] 90,898	[3] 237,148	[4] 12,217	[4] 33,422
Ship and boat building	327	666	395	187
Shuttles, spools, bobbins, looms	[5]	[5]	[5]	28
Signs, scenery, displays		2,145	481	723
Sporting and athletic goods				277
Tanks	162	45		
Toys		1,254	283	79
Trunks and valises	35	805	321	231
Vehicles, motor	[6]			683
Vehicles, nonmotor	27			709
Venetian blinds	[2]	[2]	[2]	9
Woodenware and novelties	13	1,505	154	4
Total	103,641	415,963	119,194	153,078

[1] Figures for 1933 and 1940 include western white pine used for boxes and crates by plants not classified as manufacturers of wooden products, and which were not included in 1912 and 1928. The amounts included for nonmanufacturers of wooden products were as follows: 1933—15,126,000 board feet; 1940—12,839,000 board feet.

[2] Included in "Sash, doors, and general millwork."

[3] Includes planing-mill products such as siding, ceiling, and flooring.

[4] Planing-mill products not included in 1933 and 1940 canvasses except flooring which is listed separately.

[5] Does not include looms.

[6] Included in "Vehicles, nonmotor."

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